THE
CALIFORNIA MEDICAL JOURNAL.

H. T. WEBSTER, M. D., EDITOR

H. B. MEHRMANN, M. D., ASSOCIATE EDITOR.

VOL. 7. OAKLAND, CAL., NOVEMBER, 1886. NO. 11.

The Board of Examiners of the Eclectic Medical Society of California will meet throughout the year regularly at 4 o'clock P. M., on the second Thursday of each month, at the office of Geo. G. Gere, M. D., Secretary, 120 Post Street, San Francisco.

ORIGINAL COMMUNICATIONS.

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IRREDUCIBLE HERNIA.

BY GEORGE G. GERE, M. D.

WHEN hernia is neither strangulated nor incarcerated, but simply irreducible, the condition is generally dependent upon an implication of the omentum—epiplocele. The difficulty in returning the tumor is this, either tags of omentum in the sac become congested, perhaps inflamed and club-shaped, or else adhesions have formed between the omentum and the sac. I have recently had an opportunity of examining each form of obstruction and will briefly sketch a couple of illustrative cases.

CASE I.—Mrs. C., past middle age, very stout, right oblique inguinal hernia of long standing, has been wearing an "electric" truss for radical cure, with effect that intestines no longer come down, but a tender irreducible lump remains below the internal abdominal ring. This lump becoming more painful, caused me to be called upon to operate for its relief. With the usual antiseptic precautions I made an incision over the seat of the tumor. After dividing the excessively thick adipose and other tissues to the neck of the sac, numerous constricting bands were observed in the neighborhood of the internal ring, the consolidation of the tissues being apparently a result of the electrical action, or possibly pressure, of the truss. On opening the sac it was found to be occupied by three or four vascular loops of the lower free border of the omentum surrounding tabs of fat. No adhesions, and no intestine in the sac. The tag ends of omentum were highly congested, brittle and dark colored, showing that interference had occurred none too soon to prevent gangrene from obstruction of the circulation. These tags were separately ligated with carbolized silk and removed, and the incision closed except at lower angle where the ligatures were brought out for the purpose of drainage. Antiseptic dressings, compress, and bandage were applied, and the patient speedily recovered from the effects of the operation without any unfavorable symptoms.

CASE II.—Captain M., also past middle age and quite fleshy; right oblique inguinal hernia of long duration; had worn similar truss to the one previously mentioned, and with similar results except that there was not so much tenderness in the hernial mass, and the operation was undertaken more to perfect the cure than for the relief of any urgent symptoms. On incision similar constricting bands and consolidation of tissue appeared about the neck of the sac. In this case, however, adhesions had formed between the hernial tumor and the inclosing peritoneum. The tumor was a thick pouch, like the finger of a glove, consisting of both layers of the omentum, extending from the continuity of that structure and forming a secondary sac which had contained intestine, but was now empty. After the tumor was freed from its adhesions, it was transfixed with a double silk ligature (carbolized) and tied in halves; the opening was closed with the usual exception for drainage. A small abscess afterwards formed in the track of the ligature, but gave no particular trouble. Some annoyance, however, was occasioned (as also in the case previously mentioned) by the refusal of the ligatures to come away in a reasonable time, they seemed determined to "heal in" and remain permanently, and I came to the conclusion that they were rather more "antiseptic" than I cared for, and that in the future I would confine myself to catgut, which I have been using in somewhat similar cases with satisfactory results.

PHYSICAL VERSUS MENTAL CULTURE.

BY F. CORNWALL, M. D.

IN this age of universal education or rather of mental cultivation, the development of the physical part of our organism is, in this country, almost entirely lost sight of. In the previous state of our society, when the majority of our population earned their living by manual labor, the physical was developed in excess of the mental. In the present state of affairs the lives of the majority of children are without aim but for the one thing, and that the acquirement of a knowledge of books. There is one continual strain on the brain, and if the body is cultivated it is an accident and not to be credited to the educational management, but to the inherent animal spirit of the child which asserts itself, and that by disobedience to the school rules and the parental wishes. The hours of confinement and study are long, and the incentives to and opportunities for physical exercise are meager in the extreme, and at times of day when there is the least disposition to indulge in such exploits. It used to be in the rural or farming sections of this country, that a child attending school was required to perform a certain amount of manual labor morning and evening; and at least half of the year, school not being in session, the boy or girl was expected to be regularly employed in the labor of the farm. By this way the body was duly cultivated by a diversity of kinds of labor, and the brain was made vigorous by a well-sustained physique. There was the additional advantage that the mind was occupied by being employed by regular and useful pursuits. In other words, the child was educated to have a purpose in life. He was inured to some hardships and was often obliged to accept responsibilities, thereby fitting him for the responsibilities of life. It was said when Lincoln was asked to what he attributed the military success of Garfield, he not having a West Point education, he answered that it was because he was thrown on his own resources when young. It is one of the worst elements of a child's education that his or her early life is without a purpose.

The childhood of the average American youth presents a striking contrast to that of his ancestor. The well-to-do inhabitant now considers it something of a disgrace that his offspring should assist in any way in obtaining a livelihood for the family of which he is a part. Conventionalities often require that the child be kept in-doors and educated to habits becoming those many years his senior. As soon as age will possibly admit, school education is begun and for what purpose the child and perhaps the parent has no conception. He has no responsibilities except to feed himself, and every assistance is rendered him in this performance. This system, or economy, is followed to a period approaching adolescence, when the education is supposed to be finished, and the individual to be prepared for the exigencies of life.

What is the result on the subject of such a purposeless method of education? In youth, when character is forming and the future life of the boy or girl is forecast, what is going to be the consequence of this manner of training? The answer to this will depend much on the individual nature of the child. The result is always comparatively bad. Some it will ruin and others may recover from it from their inherent strength of character which may early assert itself, and overcome the perniciousness of the elements of their environment. In some better sense will assert itself early, while in others it will only do so after the life has been partly misspent.

How many illustrations of this can be called to memory by those who have observed such matters by contrasting the achievements of the father with the son? A man born to poverty, early thrown on his own resources, his education acquired by his own endeavors and intermixed with severe experiences, and who through habits formed in youth of independent thought and action rises to eminence, wishing to give his son the opportunities of education which he had not, and with the mistaken idea that his early hardships were his curse rather than his blessing, nurses his child tenderly, surrounds him with luxury and ease and has his mind stored (burdened might almost be said) with the theoretical knowledge of the universities. This petted boy's knowledge of the world is practically very limited, and what he has observed has been through the stained glass of luxury. It is likely that he will have formed many vicious habits, as the human mind must be gratified by some kind of independent undertaking, and if not permitted to engage in the legitimate or useful, it will certainly gravitate to whatever presents itself. If he has not disgraced his race and brought his parents sorrow while yet in his youth, in his first attempts at practical life it is likely he will be a miserable failure and his greatest faculty that of squandering the means accumulated by his father.

With the daughter this pernicious practice of educating, so common to our age in this country, is equally disastrous, but with this difference, that he suffers more in his morals and she more in her physique. The conventionalities of society and the schools go hand in hand in consigning our daughters to a life of physical disuse or inactivity. The proprieties insist that the little girl be *nice* as is said, and the schools provide no opportunities for physical exercise for them. The boys may engage in athletic sports of various kinds, which for the girls are considered rude, and in time she accepts the situation and gradually loses her animal spirits which should prompt her to proper uses of the body to insure its development. Our girls are thus made mentally precocious and physically defective. Instead of her education being her blessing, it becomes her curse, often producing physical defects amounting almost to deformities. In our seminaries and colleges this abuse becomes all the more deleterious, as in these institutions where the pupils are absent from their homes, the girls are closely confined by rules which are necessary to insure their moral safety, and if there is no compulsory system of gymnastics their habits are extremely inactive.

There should be more attention directed by our educators to the physical cultivation and there should be devised and introduced into our schools regular gymnastics, and their practice should be compulsory and occupy at least an hour each day. Agricultural and military colleges do good work, but the girls do not get the advantage of these. If our female sex is lamentably degenerate physically in our day and something is not done to change their habits during their years of development, they will become still more so.

COCAINE HYDROCHLORATE.

BY JOHN FEARN, M. D., OAKLAND, CAL.

IN a former paper I wrote on the erythroxylon coca plant, its habitat, cultivation, and the medicinal uses of the fluid and solid extract. In this paper I propose to write on "Cocaine Hydrochlorate." Perhaps no drug has ever been introduced to the world with such a flourish of trumpets as this same *cocaine*. The most exaggerated expectations have been raised with regard to what it will do for suffering humanity. As time moves on, experience proves that while it is in many cases a grand thing, a veritable boon to suffering humanity, yet it is by no means the *panacea* it was expected to be. My idea at this time in writing on this article, is not to give a complete *résumé* of what we know of its physiological action—this has been done from the different standpoints of varied experimenters—but I wish to draw attention to some of the varied uses to which it may be put in active practice. To do this I will give cases from my own practice. In passing I will say that my experience leads me to the conclusions expressed by G. G. Gere, M. D., in the CALIFORNIA MEDICAL JOURNAL, for May, 1885; he says: "Cocaine does with certainty lessen the local circulation; this it does by irritating (or stimulating) the sympathetic nerve fibers which accompany and control the bloodvessels, the vaso-motor nerves in fact. For example, it exsanguinates the Schneiderian membrane, and rapidly mitigates the pain and sternutation produced by the intense congestion of that membrane in an accute attack of coryza."

My first experience with this article was in a case of severe trouble following circumcision. The case had been one of congenital phymosis in a young man. The front segment had been removed, and a lint dressing had been applied; this was to have been kept moist, but had been neglected till it was only removed with great difficulty; a high degree of inflammation set in, and ulceration. It was so sensitive that dressing it was attended with severe suffering. I procured some cocaine, and making a four per cent solution, I painted the ulcerated surface with the solution. The result was most pleasing; I could dress it with collodion or anything needed, and the patient would never wince; with this aid the difficulty yielded to suitable remedies.

The second case I will note is that of a lady suffering from acute inflammation of the pharynx, the disease extending through the posterior nares, the Schneiderian membrane being very much congested. The cough and irritation were very great. Various remedies for the cough were tried with no result as regards improvement. Vesical irritation now came on; such was the condition of the sphincter vesicæ that every time she would cough water would pass, keeping her clothing wet, and as a result of this the inside of the thighs and buttocks became completely raw. Just as things had gained this point she began to menstruate, and her sufferings were great. Her trouble, which had been centric, was now very largely peripheral. The irritation and extreme soreness about the thighs, etc., seemed to perpetuate the trouble, and it did seem as though local means would have to play a large part in the cure. I prescribed as follows:—

℞. Solution Hydrochlorate Cocaine 4% ʒj.
Ung. Aqua Rosæ ℥iss.

M. Sig.—Apply to denuded surface as directed.

℞. Solution Hydrochlorate Cocaine 2% ʒj.
Spec. Apis. Mel. gtts. iij.
Aqua Distil. ℥iij.

M. Sig.—ʒj. every two or three hours, according to cough.

The result was very pleasing. The application of the ointment gave immediate relief, and with the internal use of the medicine as above, the relief became permanent.

Case III.—A commercial traveler got a cinder in his eye; the suffering was quite severe. On examination where the spark fell, it seemed to have removed a small portion of mucous membrane as clean as though it had been removed with a knife. This spot was very sensitive to light, and the touch even of the eyelid. A little two per cent solution was applied with a camel's hair pencil. Result, immediate relief, with no return of the sensitiveness; so that in this case it was not merely palliative, it was certainly curative.

Case IV.—A gentleman had suffered with an acute attack of catarrh; the Schneiderian membrane was very much congested. After the catarrh was gone, there were left in the nasal cavity several very sensitive places; they were true fissures in the mucous membrane; frequently these would scab over, soon to be bare again; and when the cold air would strike these in the evening, besides the pain, it would give rise to uncontrollable fits of sneezing. Iodoform and vaseline and other things were tried; they would remove the dry crusts, but they never healed the sores, nor even relieved the sensitiveness. I then prescribed.

℞. Cocaine Hydrochlorate Solution 4% gtts. xx.
Ung. Aqua Rosæ ʒiv.

M. Sig.---Apply to the sores three times a day.

Result, complete relief, and a radical removal of the trouble.

Case V.—A young man was brought to me suffering terribly. His primary difficulty had been an attack of gonorrhœa. Being a stranger in town, and seeing the advertisement of one of those self-styled philanthropists who profess to practice medicine because they love to relieve suffering humanity, he went to this advertised benefactor of the race. Result, he charged him ten dollars for one sitting. I suppose he must have given the poor sinner a very strong injection of *Argent. Nit.;* for I do not know that I ever saw a worse-looking member; the mucous membrane seemed to be completely charred, and afterwards came away in the discharges. The pain in urinating was very severe, besides which the irritation gave rise to a severe chordee, which helped to make night hideous. Prescribed:—

℞. Spec. Gelseminum ʒj.
Aqua Distil. ℥iv.

M. Sig.—ʒj. every hour while awake.

℞. Hydrochlorate Cocaine Solution 4% ʒj.
Very thin mucilage of Acacia ℥vj.

M. Sig.—Inject after urinating every three hours.

To prevent chordee at night:—

℞. Pulv. Diaphoretic (Beach) grs. xxiv.
Elix. Brom. Pot. ℥j.

M. Sig.—ʒj. at bedtime, and repeat at midnight if needed.

Diet mild and unirritating, principally boiled milk and bread. He made a good and quick recovery after the above remedies had removed the irritation. I will state here that in chordee or in gonorrhœa with great irritation, cocaine in solution used as injection is one of the most certain remedies we have. It relieves vascular congestion, and tends to bring about a permanent cure. If it only relieved the suffering it would be good; but it does more, as I have said above.

We can understand why it should be curative in these cases when we remember that it seems to possess not only the properties of a local anesthetic, but also the properties of an astringent and hemostatic.

I have only spoken of its application to mucous surfaces, save in the case where I prescribed it internally in conjunction with *apis*. But the question will be put, Does it never fail? Yes, it does, as frequently as any other remedy. In a case of pruritis of the anus and scrotum, where I expected much from it, I gained no assistance whatever. In removing a foreign body from a man's finger I injected a four per cent solution into the soft structures; but it seemed to have no power to obtund the sensitiveness of the parts. One fact seems to be pretty well established, namely, that some patients are more easily acted upon by the remedy than others. Dr. C. S. Lane, dentist, of this city, has used considerable of this remedy where the gums are tender, and especially where the crown of the tooth is gone and the gum has to be cut. He has found it very serviceable, using a four per cent solution, applying to the gums around the neck of the tooth. As showing its affinity for the soft structures, he says, frequently patients complain of the cheek and tongue opposite the gum where the solution is used being numbed, and this when no sensible effect has been made on the more dense structure of the gums. In some cases he has applied it to the teeth, to relieve the sensitiveness when being drilled, and he has succeeded. In many other cases no success has attended the application. In one case where he had a fistulous track in the alveolar process, he expected great good from its use; but no benefit followed at all. I think the reason for that may be as follows: The fistulous track is lined, not with mucous membrane, but by a true pyogenic or pus-secreting membrane.

In one of Dr. Lane's cases, as showing how easily some are affected by the remedy: He had been using cocaine on the gums before a dental operation; the patient began to complain of a prickling and numb sensation in the lower extremities; this went on till she was unable to walk without assistance, and in spite of chafing, exercise, and stimulants, this condition of things remained with more or less severity for several hours.

As I started to illustrate the use of this drug from cases in practice, I will not at this time attempt to indicate the many spheres in which it may be used; for these are many and varied. Time was when it was very expensive. I began to use it when I had to pay one dollar per grain for the remedy. At that time its price operated against its coming into general use. It can now be procured at reasonable rates, and physicians in general will find a wide and legitimate field for its use.

In the cure of the opium habit at present, I should certainly give the preference to the extracts, fluid and solid.

In the last place I think this is one of those drugs that should be in the hands of the physician, not in the hands of the people. Experience has demonstrated that there are times when its use is not safe, and I know that the habit may be acquired for the use of this drug, and the unhappy person becoming habituated to its use may be as much of a slave to it as ever was slave to opium.

ANATOMICAL LUBRICATIONS.

BY LYMAN WATKINS, M. D., BLANCHESTER, CLINTON CO., OHIO.

"ALL organized bodies, whether belonging to the animal or vegetable kingdom, are developed primordially from minute vesicles, or, as they are termed, cells."—*Wilson's Anatomy, page 67.*

From what small beginnings do all things come? The great Washington, the renowned Napoleon, and every man and woman that ever existed, sprang from a little vesicle only visible under a powerful microscope—even as a lofty mountain would be formed from a single grain of sand. The man whose thoughts are almost too deep for our understanding, the man who commands millions, turns rivers from their course, travels heaven's ethereal blue, controls the lightning, was once in existence only as a minute cell.

The beautiful cedar, the towering oak, and the immense trees of Yosemite, existed once only as mere vesicles, and are in fact, after all, only numberless multiplications of parent cells; the plan is not changed, and the cells forming a part of an organized body differ from the parent cell only as they are adapted to the different parts of the body.

The hand of a great governing Power is visible in all this. We are taught that not one of these cells shall die without his knowledge. Then when we come to consider the millions and millions of cells in one human body, or in one lusty forest tree, then the number of men and of forest trees, the mind is confused and cannot grasp the immensity of it.

But that is not all. We take into consideration the thousands of worlds, and the power that governs them and keeps them in their course, and we can but say: "Wonderful are thy works, O Lord, in wisdom hast thou made them all."

In the growth of the embryo, which is formed first, bone or the soft parts, or are they growing along together? Of course the skeleton is neither ossified nor cartilaginized before any of the soft parts are formed.

If there is no difference in the structure of the cells which go to form bone, muscle, brain, and all vital organs, the development of all must commence together, and the cells which happen to be located in the site of the future skeleton, begin to take on the form and character of bone cells, while in other localities they take on the different forms. Now if all cells are primordially the same, what causes the cells that are situated in the site of the skeleton to take on the form of bone? and why is it that any cell should be a part of any particular organ? Is there some power which says to one combination of cells, Be thou brain? Can we tell, in fine, why it is that like produces like?

SUPPORT FOR INFLAMED MAMMARY GLANDS.

BY J. C. HENDRICK, M. D., DOWNEY CITY, CAL.

IN treatment of inflammation of mammary glands, after confinement, I have found a most convenient and efficient compress in a dressed muslin bandage, wide enough to cover the gland, and fastened in from three to five places with long safety pins. After passing around the body, holes are to be clipped in the bandage for nipples. Pressure and support can be given to the gland as needed by tightening or loosening the bandage. The bandages are to be fastened below upward. What is the result? The supply of blood to the gland is lessened, and the gland is disgorged of blood, the weight is taken off, and tension is relieved, and permanent relief is hastened.

A NATIONAL WEAKNESS.

BY J. W. HUCKINS, M. D.

IN countries in which women keep their normal sphere, the number of male births exceeds those of the females by five or six per cent; but where women leave their proper sphere and take on the strong-minded element, the offspring are all females. Where the conditions of life are variable or injurious to the race, in the civilized condition the two sexes are of equal value, inclining to the side of the male, provided each sex keeps its proper sphere.

Austria and Great Britain afford us an example in which the two sexes are on an equal footing or basis, and we find, on examination of their birth-rate, that there are born one hundred and ten males to one hundred females, which shows an absolute excess of male births; while our own country is becoming full of the strong-minded element, which by and by will render us a nation of girls.

It was at one time thought that the intellectual struggle going on caused an increased development of the brain in children, and consequently larger heads in male children; but this has been found to be erroneous; for ever since the introduction of the "women's rights" movement, the heads of boys, and consequently men, have become notoriously small, and the male children of such women effeminate, so that the recent impetus given to the so-called education of girls and the employment of women in intellectual pursuits, is adding to the difficulty; and if it does not end by producing sterility, as is probable, or in the birth of female children only, which is still more probable, it must at least tend to the destruction more and more of males at birth.

It is obvious that whether we consider the health and happiness of the individual, or the future prosperity of the race, the healthy physical development of girls is of first and supreme importance. The way constitutional strength comes into play, as it undoubtedly does in sex determination, is by giving vigor to the natural action of natural laws, not by changing the operation of these laws so as to make them non-natural.

The function of the male is not one of production, but fecundation. The laws governing the development of monsters are laws of development rather than of procreation, and they come into play after conception. The natural tendency of the female is, if she does not exhaust her brain force, to produce male children in excess; and as a result when mothers live properly a large per cent of the children born are males; but let the child-bearing mother exhaust her mental powers as a teacher, preacher, doctor, astronomer, or in other literary avocation, and her children will either be all females, or, if there should be males, they will be effeminate, have small heads, and feeble brains, and resemble girls in their actions.

Woman may be more perfect in her anatomical construction than man, but her great sympathetic is merely rudimentary, so she needs a man to complete her component parts. The practice of women engaging in literary pursuits and learned professions is well enough if they maintain celibacy; but if they marry and bear children they are sapping and deteriorating the elements of national growth and vigor.

TOXICOLOGY—FOURTH PAPER.

BY A. B. MARCONNAY, PH. D., STUDENT CALIFORNIA MEDICAL COLLEGE.

THE fluid contents and the washings of the mucous membranes having been analyzed and the results carefully noted down under their proper heading of XII A., Nos. 1 and 2, as soon as their reactions have been proved without any doubt, we now begin the treatment of the stomach itself. As we remember, this part had been labeled XII B., and put aside. The first thing we have to turn our attention to, is its possible consent of volatile matters. For this purpose we put it into a strong flask and testing it by some litmus paper, we find it neutral or alkaline. If such is the case we acidulate it feebly with tartaric acid ($C_4 H_6 O_6$) and connect the first flask with a second or receiving flask, by glass tubing and caoutchouc corks. Through the doubly perforated cork of the receiving flask we lead a glass tube to a mercury pump, and obtain a vacuum. After having surrounded the receiving flask with ice we heat the flask containing the stomach gently over a water bath. The products of distillation will be water and volatile oils in all cases, and if present, prussic acid, hydrochloric acid, phosphorus, etc. In this way we do not only free our substance from volatile matters and simplify our further test, but may be able to get at some very tangible results. When the distillation ceases, we take the products and examine them carefully by redistillation and the various appropriate tests.

We then proceed to dry the sample thoroughly. This is done in the vacuum by the same apparatus with that change only, that we have to fill the receiving flask half full with sulphuric acid. We now gently heat the first flask over a sand bath, while cooling the sulphuric acid receiver with ice, and soon obtain our stomach mass dry enough to be powdered. This done we extract it with crude petroleum ether in an ether recovery apparatus. After evaporating the ether we have a residue of fatty matter. Care has to be taken to examine the petroleum extract for traces of alkaloids which possibly may be contained in it, for although we know that most alkaloids are insoluble in petroleum ether, they may have been taken up in small quantities by oil and fats and thus may have been taken up with these by the ether. We therefore shake the ether well up with slightly acidulated water, which will extract any trace of alkaloids. All that needs to be done now, is to treat this trace in the well-known manner by the ordinary regents.

In this way we have succeeded in dissolving from the dry mass the fatty matters, and the question may arise, What else has to be looked for yet? The next step must be to dissolve alkaloids and glucosides, then to destroy organic matter and to search for metals. The proper dissolvents for the alkaloids and glucosides are alcohol and ether. We therefore digest the mass in the cold with absolute alcohol for several hours, and evaporate it. Then we treat it with hot alcohol of 90 per cent, filter and exhaust the dry residue with ether. After driving off both the alcohol and the ether, we have extracts left which can be dissolved in water and have now to be tested both chemically and biologically for alkaloids, glucosides, and organic acids. Care should be taken by the analyst to test a small part of the given extract for metals, as several salts, for example, $HgCl_2$ (corrosive sublimate), may be obtained in it.

By this method, in which I differ in so far with Blyth as to take the tests for metals first, because practice and statistics as well, show a great preponderance of poisoning cases by metallic salts, as that in the majority a case of poisoning is caused by a single agent, and not by a combination of different ones; by this method then we have tested three of the four parts in which we had divided our sample, the human stomach and its contents.

We considered the way to find (1) poisonous metals, (2) strong acids and alkalies, (3) alkaloids, and have left (4) for any special examination that suggests itself. The conscientious chemist will naturally think in this case of faulty parts in the treatment and find that this is somewhat the case in regard to phosphorus, oxalic acid and oxalates, and these will have to be searched for under this head. But as this would lead too far now, we will consider this way under the proper head.

This is in short outlines the proper way for the chemist to treat a given case, but it is seldom necessary to do so, for the pathologist will come to his aid, the knife and the miscroscope will reveal him in a good many cases what to look for right from the start, and teach the beginner the old lesson again that no branch of science is clearly defined, but that one is joined by the other, and that only constant study can make him proficient in his work.

SELECTIONS.

A CONTRIBUTION TO THE STUDY OF NEUROSIS OF THE GENITO-URINARY SYSTEM.

MR. HILTON, in his book on "Rest and Pain," points out that the same nerve which supplies a mucous or serous membrane, also supplies the muscular structures surrounding or allied to it. He explains spasmodic stricture of the urethra, retention of urine, and chordee during an attack of gonorrhœa, by the irritation of the latter "setting up an excito-motor action of the spinal cord." Dr. Otis' observations have been more extended. In his writings on "Reflex Irritations," he has shown that spasmodic conditions of the deeper urethra and various referred sensations may be caused by lesions in other parts of the same urethra; and further, that these spasmodic conditions may be more or less permanent, simulating organic stricture. It is not difficult to understand these facts when the nerve supply (and its varied functions) of the genito-urinary system is borne in mind. The male urethra is not only a urinary organ, but a sexual one, and its nerves are in accordance with these different physiological necessities. As a number of confirmatory clinical observations, which also find a ready explanation in the anatomy of the nervous system, have fallen under my notice, I have ventured to present some of them in this paper, trusting that they may be read with interest by others.

A very common symptom of a subacute stage of urethritis, and of many chronic urethral conditions, is an itching of the pudenda. This itching varies greatly in intensity, and is sometimes insufferable, demanding some measure of relief. It seems to depend upon a condition of *congestion* of the mucous membrane, after the acute symptoms have subsided, and more especially of that of the bulbous or prostatic parts of the urethra. The intensity of the symptom no doubt varies with the degree of irritation or stimulation of the nerve ends in the mucous membrane, and with the neurotic state or tendencies of the individual. It is well known in the reflex-function of the spinal cord that stimuli appear to travel by "paths of different resistance." A slight stimulus follows the "most ready path to a certain motor root," while a stronger stimulus is "more widely diffused, affecting many nerve roots," and exciting greater action.* But why this peculiar *sensation* is excited in the skin is not clear. Unfortunately we know too little of the "paths of sensation." It may be that in these cases a *sensation* is reflected, and not a *motion* excited, because the function of the nerves in the irritated mucous membrane is different from that of other parts of the urethra. Or, that only the nerves controlling nutrition are irritated, and hence reflect, so to speak, a *nutritive* symptom. Hebra used to say that pruritus meant "cutaneous capillary congestion," which is one of the first steps toward a change in nutrition. Whatever may be the explanation of the development of sensation in the skin, or elsewhere, the transmission of a motor influence is clearer. Dr. Otis has established without doubt the fact that an irritation, notably a stricture of large caliber, at the meatus or in the anterior penile urethra, will excite a reflex *motor* action in the more internal muscular structures.† The function of these muscles is to contract upon and expel the contents of the urethra. This is what they were made for, and is all they can do. In response to the anterior irritation they perform their function, and continue to do so till a "tonic spasm" is induced in them, which must be in proportion to the degree of irritation or to the susceptibility of the subject. The caliber of the urethra is thus reduced, an obstacle is offered to the egress of urine and semen and to the ingress of instruments, *i. e.*, a stricture of the urethra, giving all the symptoms of an organized stricture.‡

In order to get a clearer understanding of the paths for the transmission of either or both sensation and action, it may be well to review the anatomy of the nerves of this region. The internal pudic nerve supplies the muscles of the perinæum and deep urethra. It also supplies the penis, its skin, mucous membrane, and erectile structure, and the branch known as the "dorsalis-penis" is especially accompanied by branches of the sympathetic nerve from the inferior hypogastric plexus. It will thus be seen that the same nerve which supplies the anterior part of the penis also supplies its deeper parts, notably its muscular tissues. Hence an irritation, for example at the meatus, is readily conveyed to the spinal cord, there to be converted into a motor impulse, and thence transmitted to the muscular structures of the penis. The impulse may also be transmitted to the *base and neck* of the *bladder,* for the nerves which supply these parts of this viscus arise from the same roots (second, third, and fourth sacral) from which springs the internal pudic. Another interesting fact is that this nerve (internal pudic) supplies the *integument* in front of the anus, of the perinæum, and of the back part of the scrotum; while it communicates freely with the branches of another nerve (the small sciatic) which are distributed to the *front and lateral surfaces* of the scrotum. At this point notice another important fact. The same sacral roots (second, third, fourth, and sometimes the fifth) which give origin to the internal pudic and small sciatic nerves send branches to the prostatic plexus. The nerves of the latter are of large size, and are distributed to the prostate gland and vesiculæ seminales. Here, then, is a direct communication between the prostate gland, the urethra, and the integument of the perinæum and pudenda. A direct channel for the transmission of any influence, whether it be sensory or motor.

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*See "Diseases of the Brain and Spinal Cord," by W. R. Gowers, M. D.

†See Otis on "Genito-Urinary Diseases," pp. 487 *et seq.*

‡*Ibidem.*

The rectum and genito-urinary organs are also in immediate communication, not only from contiguity, but from associated nerve supply. The internal pudic supplies the mucous membrane of the lower part of the rectum and the external sphincter muscle of the anus. Thus an irritation in one may be reflected readily to the other.

The following case is an illustration of the *cause* of the itching to which reference has been made, and of an aggravated form of it:—

A gentleman, aged twenty-eight, acquired gonorrhœa, which progressed mildly for two weeks, when, after some indiscretion in exercise, his discharge suddenly ceased, and he was seized with the symptoms, subjective and objective, of acute prostatitis. He had retention of urine and catheterism for six days. The acute symptoms gradually subsided, and he seemed to be convalescing favorably, when a slight itching, which he had noticed during the day along the perinæum, became by night more and more intense. The *anus*, the perinæum, the scrotum, and the penis itched intolerably. Sleep was impossible. He was almost frantic from the frequent calls to urinate and from the incessant scratching, which was imperative. When I saw him in the morning, he was haggard and wretched. I could scarcely believe that this one symptom could have made such a change in his appearance. His pulse was 100, temperature only 99, and he had had no pain except the moderate pain at the end of each act of urination, to which he had then become somewhat accustomed. He was not constipated, and had no rectal disease. The intensity of the itching was already subsiding, but he was speedily relieved by injecting into the rectum *very* hot water. After two injections, at an interval of two hours, he had no more of the symptom, and during his further progress no return of it.

This observation was very valuable. It confirmed me in a view of the causation of other cases of pruritus of the anus and genitals which I had already acted upon. For example: A gentleman, aged forty, was kindly referred to me by a medical friend for treatment of some irritability of the sexual organs. He complained greatly of an itching of and about the anus ("pruritus ani"), which annoyed him during the day and disturbed his sleep at night. For many months he had not had a night's rest except when using narcotics or sedative external applications. Of late both the sexual irritation and the itching had become aggravated. As he had been under the care of skilled dermatologists for the pruritus he now sought advice for the frequent erections, etc. There was no history of any venereal disease; none of hemorrhoids, except that he had occasionally passed a few drops of blood while straining at stool. He had no hemorrhoids on examination. The skin of the anus and in its neighborhood was thickened and excoriated by the constant scratching. Inquiry developed the fact that the itching extended also along the perinæum and at times upon the back of the scrotum. No stricture of the urethra could be found. The prostatic urethra was very sensitive, and the introduction of the instrument gave him great pain. Although a man apparently of considerable resolution, he could hardly bear the pain, and described it as of a dull cutting character. In answer to close questioning, he acknowledged that he had acquired the art of prolonging the act of sexual intercourse, and that he had practiced it too often. From this it was reasoned that the physiological congestion of the prostatic urethra had been renewed so often as to have now become pathological and chronic. He was advised to abstain from intercourse, to take abundant exercise in the open air, and to have the regular use of the steel sound. Reasoning also from the association of the nerve supply, that the pruritus was dependent upon the urethral congestion, he was directed to stop the narcotic lotions and salves in which he had so long slept enveloped, and to await the result. For a day or two (that day and the next) after the first use of the sound, urination was painful, and he passed a drop or two of blood at the end of each act. Then, in every way, he felt better. The effect upon the pruritus was very interesting. He was almost afraid to give up the lotions, but he slept the first night without them and with but slight itching. After that he had no itching whatever. He believed that he was cured, and remembering the pain which the sound had caused him, was glad to believe so, and did not return for treatment, but maintained in great measure the hygiene which had been ordered. Then he had a relapse; but, as the symptom, when compared with the previous two years, was insignificant and did not now disturb his sleep, he put off reporting. Finally he came in with the foregoing history. The sound was again used; this time without pain, and the subsequent urination was also painless and bloodless. His statement as to the time in which he had been *entirely* free from itching was indefinite, but the interval between the first and second use of the sound was about two months (May 25, July 20). The effect of the second introduction of the instrument was equally positive. The patient is now seen occasionally. At times he has some itching of the anus, but when he has any it is slight, and he feels it is dependent upon the degree of health in which he maintains his sexual organs.

In some cases the symptom is found in a much more limited area, and the following may be studied as a type of those in which the itching is limited to the skin of the scrotum. The explanation of its limitation may be in the fact that the irritation of the mucous membrane is in lesser degree, but I can suggest no reason for the selection. Why the sensation should be transmitted to the scrotum and not to the anus or elsewhere is not clear.

The subjects of it, however, complain quite as much as those with more extensive pruritus, and demand with equal earnestness measures of relief.

S. L. J., aged thirty-six. This man complained only of an intense itching of the front and back of the scrotum. It disturbed him quite as much during the day as at night. The integument was thickened and pigmented as a result of the continued scratching. He looked to be and complained of being "fretful and worried." He gave no other symptom pointing to the sexual organs, but examination revealed the presence of stricture of large caliber in the penile urethra, and also of an abnormally sensitive prostatic urethra. The latter in a married man, who might be supposed to be having what Keyes and Van Buren consider *sexual hygiene,* suggested further inquiry. Careful questioning developed that he had frequent intercourse, nearly every night; and that in order to avoid progeny, he practiced *withdrawal,* or "conjugal onanism."*

Here were two sources of irritation, each of which might be capable of exciting the symptoms of which he complained. He was advised to have internal urethrotomy performed; but as it was inexpedient for him to leave his business, even for a few days, sounds were systematically used instead. He was directed to have natural intercourse at longer intervals. The effect upon the itching was so gratifying that up to the present time (a year from beginning the use of the sounds) he has put off having the stricture operated upon. Although, to a certain extent, he has changed his sexual habits, he cannot be said to be *cured* of the itching. It is at times troublesome, and then he comes to have the sound introduced. This always gives him so much relief that he is perfectly contented to go on as he is. He has gained largely in weight and in general appearance, and is less "nervous" and irritable, but I believe that every source of irritation will yet have to be removed.

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*These subjects do not readily yield the necessary confidence in regard to this matter. It is only by skillful cross-questioning that the facts can be elicited.

I would not be thought to claim from the foregoing that *all* cases of itching of the *anus* or pudenda are due to irritations in the genito-urinary organs, but I trust that the explanation which is offered may serve to classify them still further, and thus simplify their treatment.

Another sensation due to irritations in the genito-urinary organs, and which is transmitted to other regions, is *pain* of different kinds. It may be complained of in the back, in the thighs and legs, in the feet, and may even cause the subject of it to walk lame. It is worthy of notice, for not seldom has it been taken as a symptom of degeneration in the spinal cord. In acute or chronic prostatitis one of the characteristic symptoms is pain, often violent, referred to one or both *thighs and legs;* a fact readily understood when it is remembered that the great and lesser sciatic nerves spring from the same sacral roots as the nerves which supply the prostate gland. The two following cases will serve to illustrate this, one in acute and the other in chronic prostatitis:—

S. L. H., aged twenty-two. Acquired gonorrhœa, which did well for about two weeks, when he had evidences of the extension of the inflammation to the deeper urethra. A week later he had a chill with rise of temperature, increased frequency of urination, and at the end of each act of urination he experienced a sharp darting pain down the back of each thigh and leg and into his heels. Examination by the rectum showed that the prostate gland was swollen to twice its normal size, tense and exquisitely tender. The pain in the legs increased in severity, and overshadowed all other symptoms. It was intermittent, recurring about every five minutes, without any relation to the acts of urination, and was described as of a "lightning-like" character. The whole limb would start when the pain came. He dreaded it infinitely more than he did the pain of urination, and it was necessary to keep him constantly under the influence of morphia. This severe pain in the legs began on the first day of the disease, and by the fifth the patient no longer required morphia. On this day (the fifth) he had complete retention of urine, and the catheter was used till the twelfth day. The enlargement of the prostate was plainly perceptible by the rectum for a week longer. It was evident, therefore, that the amount of *swelling* did not determine the *degree of pain*, but that it was dependent upon the irritation of the nerves by the acuteness of the disease. This is interesting in relation to the next case, which, although of a chronic character, had, at times, exacerbations of an active kind.

L. F. H., aged twenty-six. This patient has a history of sexual irritation from boyhood. Masturbation four times a week from thirteen to fifteen; then once in two weeks till twenty-one; after that occasionally till present time. Gonorrhœa at eighteen. For the past four or five years erections have been imperfect, and intercourse almost impossible, although frequently attempted. For the same period of time he has suffered from pains (not acute) in the penis at the peno-scrotal junction, and in the rectum, especially after walking. He has also a peculiar feeling of retraction or "drawing back," which he locates somewhere in the deep urethra. But that which disturbs him chiefly is the fact that pain is now experienced down the back of the right thigh, and in the calf of the right leg. At times this pain is of greater severity; then locomotion is interfered with, and he limps with this leg. Examination by the rectum shows that the prostate gland is irregularly enlarged and harder than normal. The enlargement *seems* to be more antero-posteriorly than laterally, and is greatest on the right side. Gentle pressure on the lobes gives him an indescribable sensation in the rectum. The same pressure upon the median line of the organ causes a sensation of the ejaculation of semen, and at the same time a dull pain in the penis.

While pressing here the examining finger feels a distinct spasm or twitch, limited to the immediate neighborhood of the prostate, and the patient exclaims, "That is the drawing-back feeling that I told you of." He has also strictures of large caliber in the penile urethra, and the prostatic urethra is abnormally sensative.

The patient was reassured in regard to his having "spinal disease," and the relation between the chronically inflamed prostate and the pains in the legs was explained to him. The influence of the strictures upon the deeper structures was also shown to him, and he was advised to have internal urethrotomy as the first step in the treatment. This was accordingly done. The details of treatment are not necessary, but in brief it may be stated that applications of nitrate of silver were made to the prostatic urethra; absolute continence was enjoined, and abstinence from tobacco and alcohol advised. The intensity of the pains in the legs speedily diminished, and they entirely disappeared in two months. At the end of three months it is recorded: Prostate feels elastic and normal; no tumefaction of lobes; no pain, and no sense of ejaculation produced by pressure; no spasm of *levator ani* (?); occasional pains in the penis and rectum persisted till his marriage (three months later), and for some time thereafter, but he had no difficulty with intercourse from the first.

The following case, though not unique, has an element which I have not met in others, nor seen recorded, but as it bears upon the subject of transmitted sensations, it may be read with interest:—

M. H. A., aged twenty-six. After repeated, prolonged, and violent sexual intercourse, he had a sudden, sharp, darting pain in the left testicle. It was intermittent, and "flashed" upon him at any time—even at night—destroying his rest. Occasionally it radiated to the left lumbar region and to the left thigh. *He had noticed that unless he took care when sitting, pressure somewhere upon the left leg caused this pain in the testicle.* The pain has persisted (now two years to the time of taking this history), and there is no other symptom pointing to the sexual apparatus.

When he came under my care he was in poor condition from disturbed sleep, and in constant apprehension of the pain. There was no enlargement or tenderness of the prostate gland. There was no swelling of the testicles, but the left epididymis was sensitive, and the patient winced while being gently examined. There was no stricture, but the whole urethra was very sensitive, and he complained especially when the sound entered its deeper parts. The interesting feature was *that pressure over the left great sciatic nerve would produce the pain in the left testicle*, but handling the latter did not cause pain in the leg.

This patient has now been intermittently under my observation for nearly three years. All that I can claim as the result of treatment is that the pain has been modified, is no longer felt in his thigh, and does not interfere with his general well-being. I doubt if anything short of marriage will permanently relieve him. He has had the benefit of varied counsel, but the measure which has done him the most good has been the *systematic, persistent* use of the steel sound. In regard to the latter, it may be as well to state that a haphazard, interrupted use did him no good. To be more minute, we together observed that if the sound was passed, and then an interval of a week or two was caused by a journey or by the exigencies of business, that he always had more pain. To use his own language, "The first use of the instrument seems to stir me up." He refused to have it done unless he was sure that he could return in three or four days. It was necessary to pass the sound at intervals of three or four days for two or three weeks at a time. Then relief would be had, and he would disappear for a time.—*L. Bolton Bangs, M. D., in New York Medical Monthly.*

THE DIETARY IN ACUTE DISEASES.

STRANGE as it may seem, the present method of feeding persons acutely ill is nearly as irrational as if Majendie had never existed, and physiology remained an unborn science. Fashion has ruled the roost. Veal broth had given way to calvesfoot jelly when my acquaintance with sick persons commenced. The

French committee had pronounced against gelatine as a food, but that did not weigh much with the public. If a sick man died without having been duly supplied with gelatine in the form of this jelly, loud and deep were the indignant comments of his neighbors. Then came a distinct improvement in the form of milk and seltzer water introduced from Germany. This being fluid food slaked the thirst, and soothed the dry fauces in pyrexia. It sat lightly on the stomach and was agreeable to the palate. But after all, the actual nutriment supplied by it was (practically) confined to the milk sugar. Clinical observations have been borne out by experiments to the effect that the digestive ferments are greatly impaired in illness. As to the absorption of fat in febrile states, much doubt rests upon the subject. Being already in a fine emulsion, some of the fat globules may find their way into the mouths of the lacteals of the intestinal villi, and so may afford some nutriment to the system. But of the digestion of the caseine it is even more doubtful if any goes on.

Firm curdling is common, and this firm curd appears in the stools as hard white lumps. Consequently at the London Fever Hospital a strict watch is kept over the stools, and when pieces of white curd are detected means are taken to obviate this firm curdling. The two plans that suggest themselves are (1), some mechanical agent like biscuit powder which will lessen the cohesion of the curdled mass; and (2), some stronger alkali than seltzer water, Vichy or Vals, or other water well charged with alkalies may be added to the milk in equal quantities; or another plan is to stir in some light carbonate of magnesia or prepared chalk. By such means the acidity is neutralized and a curd formed which is disintegrated by the liberation of the carbonic acid. Sir William Roberts, M. D., pointed out in his address before the British Medical Association at Cardiff, in July last, that the gas of champagne lightens up the mass of food in the stomach and so aids digestion. This disintegration of the milk curd is most desirable in any morbid condition.

But in pyrexial states it is very doubtful if the digestion of albuminoids is desirable even if practically attainable. During pyrexial states there is acute and active hystolysis. That is well known. Its nitrogenized tissues melt down under a sustained high temperature by a process of acute fatty degeneration. When convalescence sets in then tissue repair is active; and the keen appetite and capable digestion provide liberal supplies of albuminoid matter for the swift histogenesis then taking place. But while the hystolytic process is afoot tissue repair is impossible. In his opening address to the medical society of London (session 1885–86), Dr. Ord, the president, made reference to some experiments he had performed which went to show that the arrest of the normal histogenetic processes in pyrexial states is one factor in the increased heat production. To attempt then to supply albuminoids to the body in conditions of high temperature is to achieve no good end; and only to increase the risks and dangers which belong to a state of blood highly charged with excrementitious matter of nitrogenized character—in other words, the typhoid condition or urœmia.

Where there is little or no pyrexia present, then the caseine of milk may be both digested and useful. Beef tea containing some of the meat fibrine, too, is useful. Part, if not all of the meat fiber ought to be beaten to a paste or pulp and then returned to the infusion, by which means a distinct food-value is given to the beef tea. In acute gastric disturbance, in conditions of debility, as after hemorrhage, such forms of albuminoids are excellent, and supply the tissue needs until more solid food can be taken.

But in some acute pyrexial states only fluid foods can be taken. The thirst causes a demand for fluids on the one hand, while fluid forms of food are best tolerated by the stomach. What should these fluid foods consist of? In the first place comes milk (with its soluble milk-sugar), which may be given with seltzer or other water, or as whey, or with water; in the latter case it is well to add some soluble carbo-hydrate, as any food consisting of predigested starch. Also a malt extract prepared as follows: Reduce to consistency by the addition of a little water, until the fluidity is such that it will readily mix with some aerated water. This forms a most excellent food containing soluble carbo-hydrates of the most digestible character.

Cereal matter which has been well baked or malted is *par excellence* the food for pyrexial states. A certain conversion of the insoluble starch into soluble matters as dextrine (and maltose in malted preparations) has thus been brought about. Baked and malted preparations are now on the market in any quantity. Where prepared food contains malt it possesses diastase which can further carry on the starch conversion into or towards maltose in the presence of warmth and moisture. Such predigested and self-digestible food of farinaceous character can be used in various ways. It can be added to milk and increases its nutritive value. It is invaluable as an addition to beef tea, chicken broth, and mutton broth, giving the beverage a distinct food value. It can be added to any soup which is best prepared from fish. It can be used with home-made lemonade, or apple water, lending to them a nutritive value.

Further, such soluble carbo-hydrates (prepared according to the directions supplied with each "Food") form a fluid vehicle in which wine or spirits can be given pleasantly, when some stimulant is indicated.

Preparations of predigested starch are of unspeakable value in acute pyrexial states when the natural digestive powers are greatly impaired.—*J. Milner Fothergill, M. D., in Journal of Reconstructives.*

METHOD IN MEDICAL STUDY.

OUR medical colleges contain such a promiscuous mass of material from which physicians are to be made, that advice as to *how to study* will, in the opinion of the writer, be appreciated by many, having met with a considerable number of students of medicine who have confessed that the greater part of their first session at college was consumed in mastering those methods which, once acquired, made study a pleasure to them, instead of up-hill work, as it had been at the commencement. To the A. B. or B. S., or to those who have had the proper general scientific framework which should be the groundwork upon which to build a special study, or to many such, the following remarks will seem matter of fact and old. However, not only do most of our medical colleges admit men without satisfying themselves that they possess even an ordinary grammar-school education, but it is equally evident that a considerable number of men graduate from good medical colleges who lack even a rudimentary knowledge of general educational branches. For instance, from letters recently received from graduates in medicine in relation to instruction in quizzes, the following have been clipped: "I *except* (accept) your terms;" "I make you the following proposition: *me* to pay," etc.; "I have *did* more studying after graduation than ever before;" "am much *oblidge;*" "your *tearms.*" Yet reference shows all these men to have had their degrees from reputable colleges. These facts are deplorable, but none the less real. These cases have been cited to show that the following remarks to undergraduates will reach many who need them, though the writer does not wish to be understood as implying that they are intended only for such.

The requisites for proper medical study are good health, at least an average general educational training, method, and industry. Most men who have had much experience in the instruction of medical students will agree with the writer that undergraduates may be divided into three sets of men: First, those whose desire it is by work and perseverance to take a high rank in the profession—to occupy the "best seat in the house," so to speak; secondly, those who have perhaps equally high ambitions, but, from the possession of less talent, or, perhaps, other circumstances over which they have no control, are content to occupy less elevated positions; thirdly, the men who wish to "slip through" with as little expenditure of mental force as is possible; they regret that a diploma is necessary to practice medicine, but, this being the case, they accommodate themselves to the least amount of work necessary to reach the goal. Unfortunately, it must be admitted that even this third class often succeeds in procuring licenses to prey upon the public. We shall leave it out of consideration, however; it is well it represents a minority. But, since we cannot recommend any method of securing a diploma "in an easy way," the following remarks do not apply to them.

During the first year at college the primary branches—physics, chemistry, physiology, and anatomy—will probably be all the student will be able to do justice to, especially since dissections will and should consume much of his time; possibly, should he have the opportunity, some work in the chemical and physiological laboratory and in the acquisition of a knowledge of the physical properties of drugs may be added. As a matter of fact, the first session is often neglected and much of the time wasted in acquiring an "unnecessarily deep" knowledge of the city, especially if it is the student's first visit.

During the second year the branches mentioned should be continued, and, in addition, the four chief final branches—practice of medicine, surgery, obstetrics, and materia medica and therapeutics—should be taken up. It is only during the latter part of the second session that clinics will be of value, unless the student has read practice, surgery, and materia medica during the preceding summer months. In the selection of clinics the time left after proper reading must be taken into consideration, and in the choice of clinics general medicine and surgery should have the most attention.

During the third year physics and chemistry may be dropped; but all the other branches retained, and, in addition, the special subjects—eye, ear, throat, children, women, nervous, venereal, and skin—should receive as much attention as the other branches will permit. It is in these special studies that the four years' course accomplishes so much good; it is almost impossible to crowd them into the third year and yet do justice to the fundamental branches. The tendency to increase the period of medical study in this country is already felt, and is very gratifying.

At the close of the second year the student should endeavor to obtain the position of substitute in some hospital; during the summer months many such opportunities present themselves. This brings up the question, Should medical students work during the summer? In the great majority of cases a reasonable amount of work, less than in winter—say six hours—should be indulged in, reserving the last month previous to the reopening of college for complete rest and thorough recuperation. Most medical students do no reading during the summer, and thus make the winter's work all the more difficult. Such idleness during vacation is, in many cases, essential to health, owing to the student having become fagged out by injudiciously hard work during the winter. But such results can be avoided in most cases by the adoption of a regular plan and method of studying such as the writer is about to describe.

Deducting eight hours, which we will consider the average requirement for sleep, we have sixteen hours to be consumed in the day's requirements, medical and otherwise. Of these sixteen hours, let us allot one hour to toilet purposes—dressing, retiring, and closet; two and a half hours to meals—three quarters of an hour each for breakfast and lunch, and one hour for dinner (including the post-prandial cigar or cigarette); an hour and a half to exercise; one hour to unavoidable waste; this leaves ten hours for study. Thus:—

Sleep		8 hours;
Meals	Breakfast . $\frac{3}{4}$ Lunch . . . $\frac{3}{4}$ Dinner . . . 1	$2\frac{1}{2}$ "
Exercise		$1\frac{1}{2}$ hour;
Toilet purposes		1 "
Unavoidable waste		1 "
Study		10 hours.
		24 "

The time allotted to study embraces the hours spent in attending lectures, clinics, recitations or quizzes, and in reading. It will be noticed that no allowance has been made for time consumed in going to and from college; this should be considered as exercise, and the student does well who selects a boarding-house distant about fifteen minutes from college, and forms the habit of walking briskly in coming and going; to a hard student, such exercise is the most beneficial, since it is severe enough without being fatiguing. But the medical student must have recreation just as more fortunate beings; he should devote one entire day each week to recreation or rest without any medical thoughts, and also one evening during the week—preferably about the middle; but this evening cannot be fixed upon any particular day, and had better be taken when the student feels the need of it. There always occur to every one periods when the mind refuses to act sufficiently for careful reading; when such a time appears, let the student give up the attempt, and spend the evening at the theater or in the company of friends at some other sort of amusement.

Doubtless many who have been in the habit of studying by fits and starts—of working one week until two or three in the morning, and the next week, as a consequence of over-fatigue, have been unable to do any work at all—will think such a plan too strict, and involving too much sacrifice of enjoyment; but, wishing to know even a moderate amount of medicine, he must expect to make a sacrifice if he desires to graduate with credit at the end of three years' work. Such a subdivision of the day is not recommended from theory; such very gratifying results have been observed from its adoption by many students that the writer feels confident that all who substitute it for the fitful all-night work in spells, will have every reason to be satisfied after a fair trial. It is the man who works methodically and regularly, who observes the rules of health which such a plan allows, retires at eleven, and allots proper time to meals and exercise, that comes out ahead, rather than the overworked student, who, with too little sleep, insufficient or no exercise, hasty meals, and an endeavor to force an abnormal amount of brain-work, breaks down when the session is but half over, and is compelled to do a mediocre amount of work during the rest of the term; while the man to whom such a plan is too laborious, involves too much outlay of mental energy, and is undesirable because perhaps it cuts off too many enjoyments in the way of society gatherings, etc., may manage to secure his diploma, but will certainly know but a small percentage of what three years' study should represent.

Besides adopting some such *plan* of work, *method* should be inculcated in the student's labors. It is almost needless to state that committing to memory, word for word, is rarely necessary in medical study; careful and repeated reading, giving one's full attention to the subject in hand, is the proper method of retaining knowledge. In anatomy, for instance, in studying osteology, the bones or skeleton should be next to the student. When a case presents itself in a clinic, he should read up all about the disease illustrated at his earliest opportunity. Again, knowing what the lecturer is going to treat of, he should have read over carefully the expected topic the evening before; he will then derive many times more benefit from the delivery than if the topic is new to him; if he has done this, he will also be in a good position to take serviceable notes of the lecture—not an attempt to report it in entirety, but simply headings, together with opinions of the lecturer differing from those expressed in text-books or not to be found there.

Finally, about quiz-classes. Are they a necessary adjunct to the medical student's curriculum? If he has sufficient determination to carry out the advice given above, he needs no quiz-class; many, however, lack in will-power and do not adhere to a regular plan of work unless pushed by the knowledge of having to answer in class—this acts as an incitant to study; to others these classes are a sort of relief from study, a grateful competition through which they can compare their progress with that of others, and very often an aid. Hence it is that so many and probably the great majority of students avail themselves of the many quiz-classes existing in all cities possessing medical colleges. No need for such extra instruction would exist were the practice of holding recitations—attendance at which is compulsory and answers rated—which exists in literary colleges, prevalent in those of medicine.

Much of the above information may seem unnecessary; but the writer's experience with a large number of students from a college rated among the best, as well as with graduates from colleges all over the country, in the capacity of preceptor, makes him feel confident that it will prove welcome to many who have not had any but their own guidance in the methods and plan of medical study.

Foreign medical journals are in the habit of speaking disparagingly of the requirements for the degree of "Doctor in Medicine" in this country, while overlooking their own defects in this line; it must be admitted that, in some parts of the United States, there is some foundation for such remarks; but it is daily becoming less. Every opportunity for the most thorough acquisition of every branch of medicine exists in our country; this is shown by the fact that our best men are equal to those of other countries; they hold their own at international congresses, while sometimes an American even captures a prize in competition in foreign lands (as at Brussels recently). It rests, therefore, chiefly with the student to what extent he will avail himself of undisputed opportunities; it depends in great measure upon his interest, perseverance, and work, whether he will occupy "the upper stories" or mingle with the crowd; and, in the hope that to him they will prove serviceable, the foregoing lines have been written.—*Charles H. May, M. D., in N. Y. Medical Journal.*

THE EXPLORATION, EXCAVATION AND ILLUMINATION OF THE INTERIOR OF BONES IN ANY PART OF THE BODY.*

I WISH to make a preliminary communication to this society upon a subject to which I have been giving some thought during a period of about a year and a half or two years. Not only have I been giving some thought to the subject, but have actually spent considerable time in the elaboration of instruments for executing the work in question. I refer to the exploration, excavation, and illumination of the interior of bones in any part of the body.

The object of the operative procedure which I contemplate, stated in general terms, is the speedy cure or termination of morbid processes which, when left to take their course, tend to long continuance and are usually followed by a train of disastrous sequences. I refer more particularly to caries of the ends of long bones entering into the formation of joints, whether the morbid process be tubercular or not. We find abundant support in favor of pathological experimentation and clinical research in the direction indicated.

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*Addressed to the Clinical Society of the New York Post-Graduate Medical School and Hospital, Feb. 21, 1885.

First. Most of our pathological observations on the bone diseases of joints go to support the general idea that the morbid process, as a rule, primarily *attacks the central or cancellous portions of the ends of bone rather than the compact tissue on the surface; and futhermore, that the area of bone affected, in the early clinical history of these ailments, is not only well defined but of limited extent.*[*]

Second. That, "*whenever artificial or pathological irritation causes an exuberant development of embryonic elements, and the irritation be removed, the new embryonic tissue tends to return to the primitive form of the tissue which served as a matrix.*"[†]

Third. "For new osseous tissue to be rapidly developed on the surface of a denuded bone it is not necessary that it should be covered with periosteum." . . . "It is not only, moreover, on the surface of inflamed bones that osseous tissue is produced; in fact, when inflammation ceases, the anfractuous cavities which have been hollowed in the bone are soon filled up by new osseous layers, which are developed in exactly the same way as on the surface of the bone."[‡]

The benefit which it is believed will accrue to suffering humanity from a thorough elaboration of these ideas will be to place such information in the hands of the surgeon as will enable him to make,

First, An early positive diagnosis of the existence of disease in the bone;

Second, To determine its site and probable extent;

Third, To remove, by operative procedures, the diseased area of tissue;

Fourth, By properly conducting the after treatment, to secure the filling up of this cavity with new and healthy osseous tissue.

Much study and careful thought, to say nothing of the expense of conducting experiments and elaborating instruments and apparatus, will be required to realize fully what, it is believed, will ultimately accrue to medical science.

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[*] Attention was called to this fact in a paper which I read before the Medical Society of the State of New York, February 6, 1884, entitled "The Fundamental Principles of Mechanico-Therapy in Hip Disease; based on a Consideration of Clinical, Pathological, and Physico-Physiological Data, with a description of New Forms of Elastic Tension Hip Splints."

[†] Manual of Pathological Histology by Cornil and Ranvier, translated by A. M. Hart, Vol. I, p. 116. London, 1882.

[‡] Loc. cito., p. 331.

In order to successfully conduct an operation of the interior of the head of any of the bones entering into the formation of the larger articulations, it will be necessary that the surgeon possess an intimate knowledge of intra-epiphyseal topographical anatomy; that is to say, it will be necessary for him, in conducting these excavations, to be able to estimate very closely the distance from any point in the interior of the bone, to its surface in any direction. Otherwise, the healthy and compact outer layer of bone will be unnecessarily perforated.

I may be permitted to briefly state what I have already done in the way of promoting the proposed line of research.

First of all it was evident to me that we must be provided with some means which would enable us to cut bone with greater facility and accuracy than could be done with any instrument now in use. To this end I have devoted much thought and time, and have expended a very considerable amount of money. My aim has been to make as nearly a universal osteotome as possible; that is, an instrument with which the surgeon can cut bone with ease, safety, and accuracy in any desired direction. The instrument which I have elaborated is called the electro-osteotome. Public attention was first directed to it in the issue of the *Medical Record* for October 27, 1883. Since that time I have improved the instrument very materially. A full description of these improvements was given and a practical demonstration of the working of the instrument was made before the New York Academy of Medicine, the 19th of February, 1885. I cannot here again give a full description of the instrument, but will simply say that, as it is now constructed, it is provided with two head-pieces, one for the carrying of various sizes of circular saws, and the other for the holding of drills and burrs of various shapes and sizes. By means of this instrument a bone may be perforated with any size drill up to a quarter of an inch in diameter, or a cross or longitudinal section of it made with as much facility as a similar wound could be made in the soft parts by means of a sharp scalpel.

As to the use of this instrument for the work in hand:—

First. For the early positive diagnosis of the existence of diseased bone. For this purpose the instrument is provided with very fine drills from the one-sixteenth to the one thirty-second of an inch in diameter. These drills are constructed, not after the form of the ordinary twist drill, but upon the principle of a cheese-tester; that is, they have a longitudinal groove on one side. By means of such a drill a plug or sample can be removed from any suspected area of bone. No incision through the soft parts is necessary. The drills revolve at a very high rate of speed, and readily penetrate the soft parts and bone. Upon removal of the drill, the debris lodged in the groove is placed upon a glass slide and examined under the microscope. If there be commencing ostitis, the characteristic findings will be manifest. Of course, when drilling into the head of a bone, and a cavity or soft spot is reached, the sensation communicated to the hand will be all that is desired to establish the fact. The use of the drill in this manner is analagous to the use of the hypodermic needle in the soft parts for diagnostic purposes. If no disease exists, no harm is done by means of the puncture.

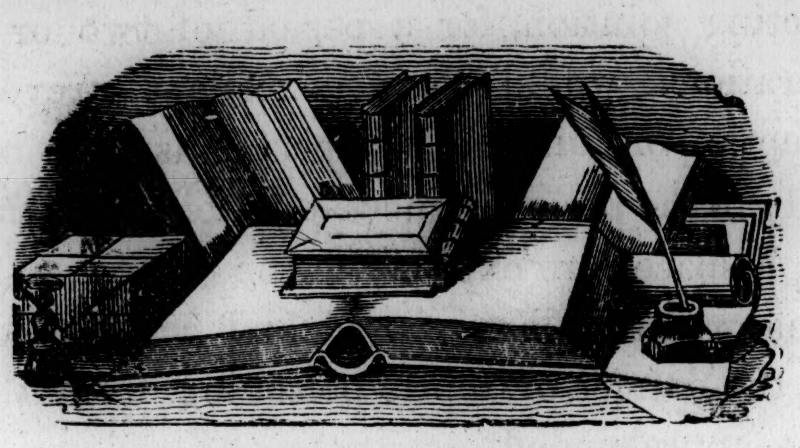
Once having thus positively determined the existence, site, and probable extent of disease, an incision is made down to the bone, and a large drill or trephine, from a quarter of an inch to a half inch in diameter, is carried through the bone into the diseased area or cavity. Upon removing this, smaller drills or burrs may be passed in through the opening thus made, and used to excavate the affected bone.

For the thorough inspection of the parts, I have had constructed a miniature incandescent lamp, so small as to readily pass through a quarter-inch drill hole. These lamps (half-candle) furnish sufficient light to thoroughly illuminate the interior of any bone cavity.

In operating upon the living subject there may be more or less bleeding. The hemorrhage, however, may be controlled by the use of rhigolene spray.

Regarding the dangers of systemic poisoning from local operations on bones, I have thought that continuous irrigation with a disinfecting solution, for a period of two or three days following operations, would be an excellent preventive. The danger from septic poisoning in all operations upon bones is confined principally to the period immediately following the operation, when the lymph spaces are exposed to the discharges. After the active inflammatory stage has passed and a granulating surface is established, the danger of septic poisoning from this cause is no longer to be apprehended.

For the purpose of continuous irrigation of an intraosseous cavity, I have thought of using short silver or aluminum tubes of a size which will fit closely into the opening leading to the excavated area of bone. Into this a cork, provided with two holes and two glass rods, is introduced. Through one of these glass rods the disinfecting solution is conveyed into the cavity, and out of the other it finds its way into the external world. After the period of danger from septic poisoning is past, the continuous irrigation may be dispensed with and the wound washed out as occasion requires.—*Milton Josiah Roberts, M. D.*



EDITORIAL.

Anal Fissure.—The symptoms of this affection are obscure but constipation is almost always present. An important symptom is difficulty in defecation. The patient seems to have lost the power of expelling the fæces. The sphincter has been irritated until its grip so overcomes the power of the expulsive forces as to have seemingly paralyzed them. The sphincter seems firm and rigid to the touch. An irritable ulcer just above the sphincter causes these symptoms. "Irritable Ulcer of the Rectum," and "Anal Fissure," are synonymous terms.

Some teachers inform us that if the anal outlet be rolled outward with the fingers, the fissure may be discovered. Sometimes this is the case, but often the ulcer is too high to be discovered in this manner. An anal speculum should be so introduced that when expanded the posterior surface of the rectum will be exposed. Sometimes the ulcer will be located upon some other part, but commonly the posterior wall is its seat of location. A small oblong oval ulcer with raised edges surrounded by a hardened, reddened base, is the condition commonly existing. It is not sensitive to the touch. Indeed, the patient will be surprised to know of its existence. Nevertheless, it is provocative of a great amount of mischief. The constipation is a small matter compared with the intestinal gases pent up, the crawling sensations in the bowels, the digestive disorder, the languor, headache, and general good-for-nothing feeling.

The treatment for this affection is pretty well canvassed by different authors. Some have advised dissecting the ulcer out of its bed. Some advise the application of caustics. Some cut across the fibers of the sphincter The contracting of the sphincter doubtless perpetuates the trouble. It has been found that when that muscle is quieted for a time, the ulcer heals. Fecal passage also adds to the trouble. Stretching the sphincter forcibly is a very effective measure. The patient being anesthetized, the thumbs of the operator are vaselined or oiled and introduced into the anus back to back and the sphincter stretched until its fibers give way. There is very little danger of stretching the part too much. However, in an elderly female who has suffered previously from a partially lacerated perinæum, recklessness might rupture the recto-vaginal wall.

Following this operation the ointment recommended by Professor Howe, of twenty grains of salicylic acid to an ounce of vaseline, is a valuable agent to encourage the healing process while the sphincter is regaining its grip. This preparation has been put forward as an infallible remedy for anal fissure, especially when assisted by the internal administration of small doses of arsenic and lacto-phosphate of lime, but it does not effect a radical cure in the majority of cases. It palliates. The vaseline lubricates the outlet for the better evacuation and the salicylic acid removes the irritability of the ulcer in a measure, but when the remedy is dropped the difficulty is liable to return.

A remedy which will probably be the favorite one with the profession some day, is the application of galvanism to the ulcer. This is accomplished by the use of a rectal electrode attached to the negative pole of a galvanic battery, eight or ten cells being thrown into the circuit, while the positive is held upon the sacrum or opposite the ulcer, wherever that may be. The measure is now introduced by "ye editor."

New Locations.—The editor occasionally receives a long letter from some practitioner in the East, inquiring about locations, and climate for some chronic trouble with which the writer, or some member of his family, is afflicted, and asking advice as to the advisability of his immigrating here for health and profit.

While we have been very much discommoded by so doing, we have answered in the neighborhood of twenty such letters within the past year, and while we are glad to be of service to any person with sufficient breadth of soul to be a genuine Eclectic, we would very much prefer that those who desire to know about our climate and advantages, would subscribe for the JOURNAL and obtain these points without requiring special attention.

We would be glad to have subscribers of the JOURNAL in different parts of the State contribute such information as is peculiar to their localities on these points, describing the variations of climate during the year, the good and objectionable points, the prevailing diseases, and the effects observed upon immigrants, especially as regards consumption. If those of our subscribers in various localities will bestir themselves and do this the coming year, it will add very much to the interest of the JOURNAL.

We believe that no other State in the Union presents such a diversity of climate, therefore every one of our subscribers can contribute something new.

With regard to locations we are selfish enough to give our own graduates the preference in choice, but are glad to welcome all who come qualified and resolved to pursue a course that will tend to commend our profession to the public. It is an unfortunate fact that too many professed Eletics, especially in time past, have brought with them from the East quackish propensities. Their motto has been, "Anything for lucre, respectability be damned."

Our Examining Board is prepared to give such new-comers the cold shoulder. A few notable quacks, some through downright lying, have been licensed, by presenting diplomas from respectable institutions and promising to do nothing but a respectable practice, but we are on the lookout now for all such characters. We hope none will come.

"Method in Medical Study."—Dr. May's article reprinted in the present number contains a large fund of valuable advice for students attending medical lectures, and which, if acted upon, cannot fail to bear good fruit. Now at the time of the beginning of our college term we consider its production very appropriate.

There is no doubt that the methodical person makes the most certain success in life. There may be an inborn genius in one which will lift him above erratic, careless, and slovenly habits, but if to his natural gift were added that of carefully-observed methods of study and action, there is little doubt that he might make still better progress and success in life.

Methodical habits of student life possess more than one advantage. Undoubtedly they are conducive to the best advancement in study, but they tend to lay a foundation for regularity in the professional career which follows. A well-kept exterior and promptitude in the keeping of appointments, visits, and office hours, so far as exigencies will permit, are important virtues. The public esteem them as much in the physician as in any other functionary.

A day on and a day off at lectures, or an occasional absence even, results in an important break in the line of a teacher's course. True, one may borrow notes from a classmate, but notes cannot convey the same force of expression that words from the lips enforced by expression, attitude, and gesture often do. Second-hand lectures are not to be commended as effective imparters of instruction.

Student life, especially among male students, is liable to tend to habits that are not calculated to commend the participator to the confidence of the public or profession. The entire number of a medical class is not always bent upon acquiring knowledge. Every class is liable to contain one or more drones, whose pernicious habits of idleness, and perhaps dissipation, may be felt throughout the entire number during several months of companionship. Students should recollect that gambling, drinking, habituating of saloons or more vicious places, tend to leave a bad impress upon their future career. Even if the odor of such a student life fails to follow them, such habits and tastes once acquired are not easily shaken off, and an earnest, sturdy, persistent effort, which in these days must be made for years, sometimes, for success to follow, is intensely irksome and discouraging. It is not at all unlikely that the failure of so many physicians to make a success in life, that the rock on which they wreck, is the practice followed during college courses.

There is nothing like a proper start in order that the race may prosper and the runner win. A loss of self-respect, even though acquired during student days, may last throughout a life-time, and blight all the later years of an attempted professional career. To be forewarned is to be forearmed.

Send in Students.—The perpetuity and success of our college are now established, and we think every Eclectic must recognize the necessity for its existence on this coast. We know that the profession is crowded, but not with Eclectics. Half the towns on the coast are without a physician of our school, and many people who have preference for our methods of treatment of disease are compelled to seek other aid. The more good Eclectics we have, the better for each one of us. If there is a young man in your neighborhood who thinks of studying medicine, send him to us and we think that neither you nor he will ever regret the result. We have reason to hope for a bright future for our college, and we would like the earnest support of all of the JOURNAL readers to help us to realize our expectations. C.

Cocaine Mur. in Conjunctivitis.—All physicians have become familiar with the use of cocaine for acute coryza, but few, if any, have prescribed it for inflammation of the conjunctiva. Our experience with the drug for the latter affection is limited, but so far satisfactory. In purulent conjunctivitis it is likely to become a very useful remedy, as it materially lessens the swelling of the conjunctiva (chemosis) and prevents ulceration of the cornea, which is the dreaded complication of this disease. It had better be used in weak solutions, say 1% or ½%, and may be combined with atropia, if the latter be indicated. In milder kinds of conjunctivitis, as in the severer ones, it lessens the hyperemia and favors rest, and these are essential requirements. There are some cases in which it acts as an irritant. C.

MISCELLANEOUS PARAGRAPHS

IN our notice of "The Physicians' Leisure Library" last month, we neglected to state that the publisher is Geo. S. Davis, Detroit, Michigan.

FROM Sextius, a Pythagorean philosopher, Seneca learned the practice of daily self-examination. "When the day was over, and he betook himself to his nightly rest, he used to ask himself, What evil have you cured to-day? What vice have you resisted? In what particular have you improved? carefully considering in his heart the entire day, and taking a deliberate estimate of his deeds and words."

OAKLAND, California, Oct. 25, 1886.

DR. WEBSTER: In my article on "Terebene," of previous month, "alternated" was printed by mistake, instead of "attenuated." It occurs toward the end and should read: "Terebene and glycerine make a perfect solution; but this solution, because not sufficiently *attenuated*, does not answer well for spray."

Please make the correction. Yours very truly,

E. SELZER.

A MONSTROSITY DYING.—The daily papers have been giving an interesting account of the monstrosity known as the "twins of Locana." They are boys, and resemble each other very exactly. Their names are John and Jacob. They are separate as far as the sixth rib, and have one abdomen and one pair of legs between them. Jacob moves the right leg, John the left. The twins cannot walk, and keep their balance by lacing their arms around each other's neck. Jacob eats often and heartily, and is the healthier of the two, and, to all appearance, it is he who keeps his brother alive.—*Medical Record.*

HOW TO DETECT A MORPHINE TAKER.—Professor Bull, of Paris, states that there are two ways by which the morphine habituè can be detected, and these are to be found in the skin and in the urine. The skin will be found to be covered with little dark spots situated in the center of little indurations about the size of a large shot. It is needless to add that these indurations are the result of the little wound of the needle, but as these lesions are generally found on the inside of the thighs, the patient refuses to let them be seen, and in that case examination of the urine will prove of great service. A few drops of tincture of iron are put into the suspected liquid, and if morphia be present a blue tinge will be produced.—*Medical Record.*

BRACE, in his "Races of the Old World," relates a custom existing among the Basques, a people living on the borders of Spain and France. This consists in the mother rising and attending to her household duties as soon after parturition as she is able, while the husband is installed in bed with the infant, to receive the congratulations of the neighbors. It is said that this custom was derived from the ancient Iberians and has been observed among the Tartars and Corsicans.

BOOK NOTICE.

THE SYMPATHETIC DISEASES OF THE EYE. By Ludwig Manthner, M. D., Royal Professor in the University of Vienna. Translated by Warren Webster, Surgeon U. S. Army, and James A. Spaulding, M. D., Member of the American Ophthalmological Society, Ophthalmic Surgeon to the Maine General Hospital. William Wood & Co., New York. For sale by William S. Duncombe, Medical Publisher and Book-seller, 211 Post Street, San Francisco. Price, $2.00.

This interesting monogram is designed for an authority for the general physician and surgeon, and in so far as it is practicable to make the subject clear, the terminology peculiar to ophthalmology (with which the practitioner is not usually familiar) is omitted. In most instances the family physician is the one in whose care the injuries from which sympathetic inflammation of the fellow eye proceeds, and from his wise or unwise action in the matter, will depend the weal or woe of the afflicted one. It is a too common occurrence for physicians to advise that an injured eye be left in its socket when, if they were better informed, they would do otherwise.

This work although, as remarked, is designed for the general practitioner, is a most worthy authority for the oculist.

Address William S. Duncombe, 211 Post Street, San Francisco, California.

MEDICAL AND SURGICAL DIRECTORY OF THE UNITED STATES. R. L. Polk & Co., Detroit, Michigan, Publishers.

A complete directory of the physicians of the United States is a valuable work of reference for any who desire to communicate largely with their professional brethren. We believe this work is the only one published since that of Butler, some twenty years ago, and which is now, from the changes occurring since that time, worthless. The scheme proposed in the preparation of this work was to obtain the whereabouts of all physicians by actual canvass, but this evidently has not been done, for we find numerous omissions and inaccuracies which certainly would not have appeared had the names been obtained by actual canvass. From the results we have obtained, we believe the larger cities have been canvassed, while the smaller towns have been reported by medical men residing in them. In such instances professional jealousies have been abroad, and this, though a petty matter and not calculated to work any harm to those omitted, mars in a measure the value of the work. In other instances we find that physicians have left the places at which they are reported, while in a few cases we find the same name reported in two places, evidently both having been the location of the same physician at different times.

In the main we find the work fairly correct so far as our knowledge extends, and vastly superior to no work of the kind. The statistics contained are valuable, though, of course, statistics are of value for only a short time, with the rapid changes going on. Still much valuable information is contained which will always be worthy of preservation.

The names of the physicians are arranged so that the places appear in alphabetical order, the States also being arranged in that manner. The school to which one belongs is designated by R. for regular; H. for homeopathic; Ecl. for eclectic; P. M. for physio-medical.

The total number of physicians of the United States is given as 85,671, of whom 83,239 are males, and 2,432 females, affording a ratio of one physician to every 650 inhabitants. Maryland has the most physicians, there being but 329 people for each physician.

Other crowded States are Colorado, 341; Indiana, 396; Oregon, 353. All remaining States are above 400. New Mexico has relatively fewer physicians than any other State or Territory, with 1,494 people to each medical man. The remaining States and Territories coming above the one thousand mark are Utah, 1,035; North Carolina, 1,029; South Carolina, 1,084. Ohio has

502, and Kentucky, 551. There are relatively more physicians in Ohio than in either Maine, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, or Pennsylvania. Taking the table before us as a guide, the "vacancies" exist in New England rather than in either the Central or Western States. There are relatively more physicians on the Pacific Coast than on the Atlantic.

The book has been sold by subscriptions at five dollars per copy, but probably it may still be obtained of the publishing house as mentioned above.

In a nutshell, this Directory contains a list of Physicians and Surgeons of the United States, arranged by States, with School Practice, Post-office Address, Population and Location, Date and College of Graduation, all the Existing and Extinct Medical Colleges in the United States and Canada, with Locations, Offices, Number of Professors, Lecturers, Demonstrators, etc., The Various Medical Societies, Hospitals, Sanitariums, Asylums, and other Medical Institutions, Boards of Health; a synopsis of the Laws of Registration and other Laws Relating to the Profession in each State; Medical Journals, with Names of Editors, Frequency of Publication and Subscription Rates; Official List of U. S. Army, Navy and Marine Hospital Service; Roster of Examining Surgeons of the U. S. Pension Department; a descriptive sketch of each State and Territory, embodying such matters as Location, Boundaries, Extent in miles and acres, latitude, longitude; Statistics Relating to Climate; Temperature, Rate of Mortality; and Locations of all the Best-known Mineral Springs; full particulars of all National Associations and Societies Relating to Medicine and Surgery, and much other material, good, bad, and indifferent, comprised in its advertising lists.